

A Comparative Analysis of Undergraduate Thesis Courses in Canadian and Argentine Universities

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ABSTRACT

The article discusses findings from a qualitative classroom action research project that compared students' performance and quality of learning in the production of undergraduate theses in Argentine and Canadian universities. The results of the study show that there are significant common aspects in both the quality of students' theses and the problems exhibited in the research for and writing of the theses. These common aspects are distributed similarly in both courses.

Keywords: Undergraduate thesis, student learning, research, comparative education.

INTRODUCTION

This article discusses findings from a qualitative classroom action research project that took place in Argentina and Canada. The objectives of the project were twofold. First, the goal was to investigate students' quality of learning resulting from their research for and writing of their undergraduate honours' theses. Second, the study focused on identifying common problems in these theses.

The courses which students took to develop their theses were designed in the same way; and all possible variables were controlled. The results show that a relatively similar percentage of students performed at the relational level of John Bigg's SOLO taxonomy in both courses and that the rest of the students' theses presented the same or very similar problems.

This article presents the major findings of the project. The aim of the article is not to dwell on quantitative data. Instead, its goal is to paint a picture with broad strokes in order to contribute to the pedagogical underpinnings of teaching students to engage in research and writing at the undergraduate level. Nonetheless, findings and examples have been drawn from the literature to validate the results of the research.

The major finding of the study is that several factors influence the existence of these common problems, particularly, the fact that surface learning is the default orientation in university and this affects student performance, even in courses which aim to create a deep learning environment, and also the very nature of learning itself, which is a non-linear process.

MATERIALS AND METHODS

The thesis research courses

The course in Argentina was a thesis seminar taught in Spanish for undergraduate senior students from the Faculty of Psychology. And the course in Canada was a seminar taught in English for undergraduate senior students majoring in Law and Political Science. Both courses are taught in programs inserted within Social Science disciplines and encourage qualitative rather than quantitative thesis. They both also encourage thesis projects where the main data analysis consists of the

interpretation of texts under a hermeneutical methodology (Quintana & Hermida, 2019).

Despite the difference in student majors and the language of instruction, the courses were structured in the same way. They shared the same learning outcomes, the same teaching and learning activities, and the same evaluation tools. Other variables, including bibliography, classroom size, student choice of topics, and, most importantly, student backgrounds' in research, writing, and methodology, were also controlled. This study tracked down students' work in four sections of each course taught over a period of two academic years.

Epistemological conception of the courses

The epistemological conception of research in both courses was the same. Research is conceived of as a way of looking for a solution to a problem through a systematic process, which includes the production of valid and reliable information and requires the completion of certain stages so as to ensure that the solution to the problem is also valid (Borsotti, 2009). Furthermore, students had to produce a thesis that is connected to their curriculum and that incorporates the theories, principles, concepts, and methods learned throughout their undergraduate studies (Iglesias, 2014). The idea behind this is to encourage students to apply the knowledge they constructed in their studies in order to produce new knowledge instead of writing a thesis that is thoroughly unconnected to what they have studied.

Research problem in the thesis courses

Under this epistemological conception of research, the first and foremost step is the identification of the research problem. A research problem is a state of things, events, situations, or processes, whether theoretical or empirical, which are perceived as unsatisfactory or problematic (Creswell, 1994). If the solution to this problem is not obvious within the set

of existing knowledge and techniques, the problem requires research.

Since problems do not exist in isolation, the selection and formulation of the problem presuppose some general experience and knowledge of the subject. To formulate a problem, it is necessary to review the literature in the discipline, i.e., the theoretical and empirical knowledge produced on the subject in question (Saunders, Lewis, & Thornhill, 2009). The research problem must be preceded by a study of the literature and a mapping of what has already been discovered. Problem formulation may include a question, but not every question is a problem. A research question defines and guides the conceptual field of the investigation. But the research problem must still be clearly formulated as a statement, which may include a question at the end.

For an undergraduate thesis, it is not necessary to carry out original research to contribute to the advancement of knowledge in the discipline (Delamont et al. 1994), but the problem must still be relevant enough to justify carrying out a research project. Thus, it becomes necessary to explain and develop the problem so that it and its significance can be clearly understood.

Research objectives in the thesis courses

The courses emphasized a conception of research objectives as the specific achievements that the researcher hopes to obtain in the study. In other words, the objective of the research project summarizes what will be accomplished with the research (Balakumar, Inamdar & Jagadeesh, 2013). Students had to formulate a general research goal that had to be clear, concise, and declarative, which would provide guidance for carrying out the project. A clearly defined research objective helps the researcher focus on the study and determine the type of knowledge that will be produced. A general objective can be broken down in several narrower specific objectives to facilitate the investigation. Students were encouraged, but not required,

to make specific objectives coincide with the different chapters of the thesis.

Hypothesis

The hypothesis is a provisional or conjectural solution to the problem formulated as a declarative statement. It includes, at least, two variables and, at least in a general sense, it had to be testable or verifiable. On top of that, the hypothesis must be based on the literature review and must be scientifically based, i.e., it must be compatible with the existing body of knowledge (Boudah, 2019). If the research problem included a research question, then the hypothesis is the answer to that question. Although exploratory research projects may not include a hypothesis, students were asked to carry out experimental or descriptive projects which had to include a hypothesis.

LITERATURE REVIEW

Students had to produce a specific literature review. The purpose of the literature review is to place research in the context of what is already known about a topic. In these courses, literature review is conceived of a systematic and critical exposition of the theoretical and empirical knowledge produced on a certain subject. It helps formulate the problem, produce the hypothesis; and it also helps contextualize the discussion of the findings (Russell, 2000). For the undergraduate thesis research project, the literature review need not be exhaustive, but it needs to be relevant.

Theoretical framework

Students had to produce a theoretical framework, i.e., the theory or the line of research with which they would work (Imenda, 2014). The selected theory has to inform the formulation of the problem, the justification for the study, the questions and hypotheses, the selection of instruments, and the choice of methods (Pajares, 2007). Ultimately, the findings have to be analyzed in terms of how they relate to the theory or line of research underpinning the study

(Pajares, 2007). The theoretical framework is the structure that supports the theory of the research project; and it establishes the perspective by which the problem is examined.

Methodology

Students had to make their methodological approach to their research explicit. The methodology is a procedure that allows the production of systematic and rigorous solutions to the research problem (Quintana & Hermida, 2019). The methodology section has to make explicit how data are collected and analyzed (Bengtsson, 2016). In qualitative projects, students had to construct data; and in hermeneutics projects students had to gather the texts they would use for their interpretation (Quintana & Hermida, 2020). Students had to choose the data collection tools most appropriate for their project and construct their own instruments. These can include interviews, focus groups, observations, and document analysis.

For the data analysis, students had to explain in detail how they worked with the data that they collected in order to obtain the information they used to provide a solution to the research problem and to answer the research question. The process to follow for the analysis varied according to the data collection tool they adopted and elaborated. They could include: identifying common themes, establishing relationships between elements, putting elements together in a particular form, separating material elements into constituent elements, studying the elements or essential features of a concept, and discerning elements into meaning units, among many other processes (Ely, Vinz, Downing & Anzul, 1997). For purely hermeneutics projects, data analysis is replaced with interpretation of texts following the hermeneutics circle. This implies a dialectical process in which the researcher navigates between the parts and the whole of the text to achieve an adequate understanding of the text. This approach also involves a translation process, as a new

text is produced, which, while respecting the essence of the original text, provides an added value to the text under interpretation by emphasizing on its historical context (Quintana & Hermida, 2020).

Most importantly, students were encouraged to understand the principles of data analysis and text interpretation and to adapt these approaches to the needs of their own projects and in consonance with the adopted theoretical framework rather than to follow any approach too rigorously (Ely, Vinz, Downing & Anzul, 1997).

CONCLUSIONS

For the section on conclusions, students had to summarize the discussions of the whole work. Specifically, they had to restate the problem, the hypothesis, and the major findings. They also needed to remind the reader of the relevance of their theses.

Students were also encouraged, but not required, to state directions for future research and/or to make recommendations based on the implications of their theses.

RESULTS

Students' performance

A small percentage of students achieved the relational level of the SOLO taxonomy; and this percentage was very similar in both courses (Biggs and Tang, 2007). This taxonomy aims to evaluate the quality of learning. The relational level refers to quality learning where students are able to apply, analyze, and transfer what they learn. It is essentially deep learning, i.e., a committed approach to learning where learners learn for life and can apply what they learn to new situations and contexts. Deep learners discover and construct their own knowledge by negotiating meanings with peers and by making connections between existing and new knowledge (Hermida, 2014). These students produced theses that solved relatively complex research problems and that successfully incorporated all the steps of academic research as outlined above.

The most outstanding result of the study is that students in both groups showed very similar problems in similar proportions. Students who did not achieve the relational level presented the following problems in both groups in similar numbers.

Many of the theses did not have a clear research problem. Students wrote extensively without having identified a problem. In most of these cases, students even included a hypothesis, i.e., a solution to a non-existent problem.

Students handed in what they thought were complete theses. When questioned about the lack of a research problem, most of these students came up with an ad hoc problem that could fit the rest of their theses and artificially added it without changing any substantial part of their theses. This showed that their work was not guided to solve a problem but rather to comply with what they perceived was a formal university requirement for graduation (Marton, Runesson, & Tsui, 2004). Similarly, other students had questions without a problem. In most cases, these questions could have been answered without actually engaging in research. According to Bain, the default student attitude to a problem or situation is to adopt a surface approach by ignoring the conflict, or by trying to make it fit somehow within their existing cognitive structures (Bain, 2004).

The second most recurrent problem was that there was a lack of consistency among the research problem, the objectives, and the hypothesis. In these cases, the problem was clearly stated, but the objective of the thesis had no connection to the problem, and the hypothesis intended to solve a problem which was not the one identified as the research problem. Or, in other cases, the formulation of the problem included the solution to the problem. In other words, in these cases, there was no need to carry out the research, because the students already knew what the solution of the problem was.

Another common difficulty observed in the thesis was that many students tended to formulate objectives that were very broad, which has been reported in the literature as a problem that exists across the board. According to Eco (2005), “the first temptation of any student is to write a thesis that is too broad [... in a way that] will make a seasoned scholar tremble, and will present an impossible challenge for a young student.”

Another similar problem in both groups was that a relatively stable number of students took the literature review as a mere compilation of authors’ citations with little or no connection to the actual development of the thesis. The review was quite general and broad rather than relevant and specific. Furthermore, authors actually relied upon throughout the thesis, particularly in the analysis or interpretation sections, were not included in the literature review. And the works of some authors included in the literature review were not referred to in the analysis and interpretation sections.

Many students in both courses wrote theses that lacked any connection to their undergraduate curriculum studies. A few even wrote theses that were outside their disciplines. Instead of using their theses to integrate the knowledge and skills developed throughout their undergraduate journey and to give their studies a sense of completion and closure, these students wrote theses that were completely disconnected from their curriculum, as if nothing from their studies –particularly authors read and discussed extensively in previous courses- had been interesting enough to continue deepening and researching about. As Umberto Eco (2005) noted:

Even if someone is a genius, and especially if someone is a genius, he [sic] will never be diminished by starting from another author’s work. Building on a previous author’s work does not mean a student must fetishize, adore, or swear by that author, and in fact the student can

demonstrate the author’s errors and limits. Medieval writers saw themselves as “dwarves” compared to the “giant” ancients they revered, and yet they could see further than the ancients because they were “dwarves standing on the shoulders of giants.”

Finally, another similarity in both groups was that even though all theses included a theoretical framework, the actual data collection and the data analysis had little to do with that theoretical framework. In this sense, the section on the theoretical framework became meaningless, as something completely disconnected from the rest of the thesis.

DISCUSSION

While a small percentage of students succeeded in performing at the relational level and produced theses that evidenced the achievement of deep learning (Bain, 2004), most students evidenced the problems discussed above.

The fact that the problems are strikingly common shows that the root cause of these problems lies in, at least, two apparently divergent factors. On the negative side, this reflects the fact that surface learning is the prevailing orientation in university, which focuses on lectures and a conception of knowledge as encyclopedic which is transmitted by teachers and passively received by students (Tagg, 2003). This clashes with the way these thesis courses were taught. The best format for thesis work with undergraduate students is the workshop, i.e., a space where students can present their ideas and productions and continuously exchange these ideas with their peers. Unlike the more prevalent supervisor-student format, the workshop tries to recover the importance of craftwork like in an artistic atelier while preserving the collective enterprise. Everyone models and kneads their own ideas and, at the same time, discusses their peers’ works. Students do all this while constructing and learning new knowledge. In this type of workshop, students are expected to put that knowledge

into practice (Piaget, 1968). Following Piaget's model, learning is an action, understood as an intervention on the world, from which the subject and his or her environment modify each other. Therefore, the workshop space is very close to a cooking workshop where each participant will mix the ingredients in different proportions, kneading them with their own hands.

However, a hands-on thesis workshop is not enough, since the prevailing class format elsewhere in the university is that of the lecture. Tagg (2003) advanced the notion of orientation as the general tendency to take either a deep or a surface approach to studying and learning. According to Tagg (2003), an orientation is "not the product of a single course or teacher but of [students'] overall experience over many years of schooling and of the expectations founded on that experience." Despite isolated efforts in some courses that create an environment conducive to deep learning, the surface orientation "is the default setting for academic learning regardless of the subject and content." So, most universities promote a surface orientation to learning, which is difficult to change with the teaching of few isolated courses that encourage the creation of deep learning environments. So, students tend to resist moving away from the mere repetition of information to an environment in which they have to construct knowledge by negotiating meaning with peers. In the traditional coursework mode of teaching, students are asked to answer questions or solve problems. Exams in these courses often have rigid structures that generally do not promote reflection. They only foster the recollection of information. When doing a thesis, students are forced to come up with their own questions and to create their own problems instead of answering questions and solving problems posed by others. While doing a thesis, students have to put their hands in the dough and make their own pie, as learning to produce a thesis means working with and assimilating other texts,

arguments, ideas, and theories. It also means ordering and classifying these texts and ideas, and, more importantly, it means modifying them according to students' previous schemes and paradigms. But, producing a thesis also entails accommodating and even changing ourselves during this task. Producing a thesis is, thus, acting and transforming reality. The prevailing surface learning environment makes research for and writing of a thesis quite difficult for students otherwise accustomed to questions and problems designed by their teachers.

Another explanation of the problems that students had lies in the same concept of learning itself. Learning is not a linear process (Hermida, 2015). It is a process that implies forward and backward steps. It is expected that difficulties will arise when students produce a thesis for the first time, because they face problems which are new and outside their comfort zone (Bain, 2004). Students are asked to produce different drafts of their work. Inevitably, because of this characteristic of the learning as a non-linear process, some drafts will show improvements; and some –later drafts- will show setbacks before they improve again. So, in some cases, these problems are a sign of learning progress. As reported in the literature (Prosser and Trigwell, 1999), studies show that when graduate students – who were proficient writers during their undergraduate years- start to write in their graduate programs, their writing suffers even from grammar, spelling, and organization errors that were not present in those students' texts in their last years of undergraduate university studies (Gottschalk and Hjortshoj, 2003). Furthermore, a learning-from-errors approach that allows false starts and errors followed by feedback, discussion, and meaning negotiation may ultimately lead to a better quality of learning than an approach that sees errors exclusively as failure (Metcalf, 2017).

CONCLUSION

Undergraduate university courses where students have to produce a thesis as a requirement for graduation show striking similarities even when taught for different majors and in different countries. The similarities include a low percentage of thesis showing evidence of deep learning (relational level of the SOLO taxonomy) and a very high percentage of theses with a high degree of common problems. These common difficulties include the lack of a clear research problem, an inconsistency among the research problem, the objectives, and the hypothesis, the formulation of very broad objectives, a literature review designed as a mere compilation of authors' citations with no connection to the actual research, no connection between the thesis and students' previous studies, and a lack of connection between the theoretical framework and the actual data collection and data analysis.

The explanations for these findings are both positive and negative. On the negative side, they show that the prevailing surface orientation to learning in university affects student performance, even if the thesis course is designed to foster a deep learning environment. Of all the common difficulties identified in the study the one which is the most recurrent is the lack of a clearly defined research problem. This is due to the fact that in the majority of courses that students take they have to answer questions and solve problems which their teachers pose instead of learning how to create their own problems and to ask their own questions.

On the positive side, these common problems are signs that students are embarking on the learning process, which by its very nature includes ups and downs.

There are a number of gaps in knowledge about common difficulties in research that follow from the findings of this study and would benefit from further research, particularly research on the prevalence of the difficulties for

undergraduate students to identify and formulate research problems.

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